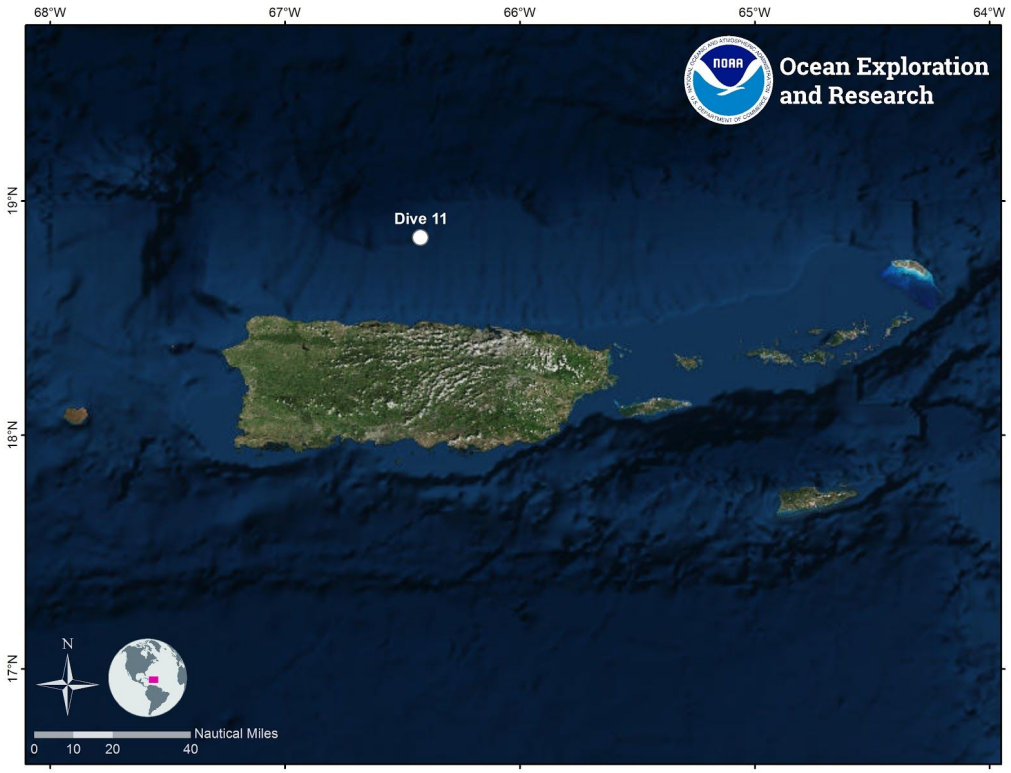
Ocean Exploration and Research

Okeanos Explorer ROV Dive Summary

Dive Information	
General Location Map	
General Area Descriptor	U.S. Caribbean Sea
Site Name	Vega Baja Landslide
Science Team Leads	Stacey Williams (ISER) Steven Auscavitch (Temple)
Expedition Coordinator	Daniel Wagner (NOAA-OER)
ROV Dive Supervisor	Chris Ritter (GFOE)
Mapping Lead	Derek Sowers (NOAA-OER)
ROV Dive Name	
Cruise	EX1811
Dive Number	DIVE11
Equipment Deployed	
ROV	*Deep Discoverer*
Camera Platform	*Seirios*

<table>
<tr><td rowspan="5">ROV Measurements</td><td>✓ CTD</td><td>✓ Depth</td><td>✓ Altitude</td></tr>
<tr><td>✓ Scanning Sonar</td><td>✓ USBL Position</td><td>✓ Heading</td></tr>
<tr><td>✓ Pitch</td><td>✓ Roll</td><td>✓ HD Camera 1</td></tr>
<tr><td>✓ HD Camera 2</td><td>✓ Low Res Cam 1</td><td>✓ Low Res Cam 2</td></tr>
<tr><td>✓ Low Res Cam 3</td><td>✓ Low Res Cam 4</td><td>✓ Low Res Cam 5</td></tr>
<tr><td>Equipment Malfunctions</td><td colspan="3">The salinity measurements by the CTD sensors on D2 showed erroneous values throughout the dive. After the dive, the faulty salinity measurements from the D2 sensors were replaced with correct values from the Seirios sensors in SeaTubeV2.</td></tr>
<tr><td>ROV Dive Summary Data (from processed ROV data)</td><td colspan="3">In Water: 2018-11-11T12:20:20.662907
18°, 50.779' N ; 66°, 24.048' W

On Bottom: 2018-11-11T14:16:50.110047
18°, 50.812' N ; 66°, 23.841' W

Off Bottom: 2018-11-11T18:52:41.297116
18°, 50.726' N ; 66°, 23.666' W

Out Water: 2018-11-11T20:41:16.206855
18°, 50.846' N ; 66°, 22.78' W

Dive duration: 8:20:55

Bottom Time: 4:35:51

Max. depth: 3342.0 m</td></tr>
<tr><td>Special Notes</td><td colspan="3">N/A</td></tr>
<tr><td>Scientists Involved (provide name, affiliation, email)</td><td colspan="3">
<table>
<tr><th>Name</th><th>Affiliation</th><th>Email</th></tr>
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<tr><td>Tara Harmer Luke</td><td>Stockton University</td><td>luket@stockton.edu</td></tr>
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</td></tr>
<tr><td>Dive Purpose</td><td colspan="3">The purpose of this dive was to explore a landslide scarp north of Vega Baja, Puerto Rico. The site was originally proposed by partners at USGS due to its potential as a geohazard. The dive sought to make observations on the geology of exposed rocks and collect samples to determine the age of any recent geological activity in the area. Further, the dive sought to characterize the seafloor fauna of the area, focusing on deep-sea corals, sponges and demersal fishes.</td></tr>
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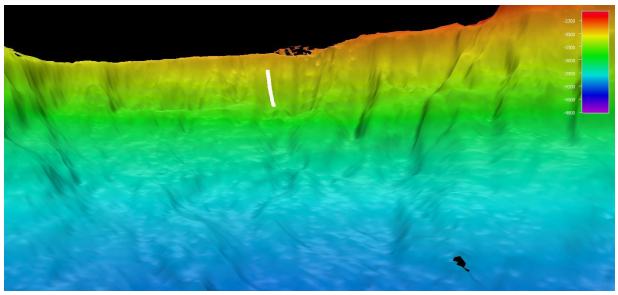
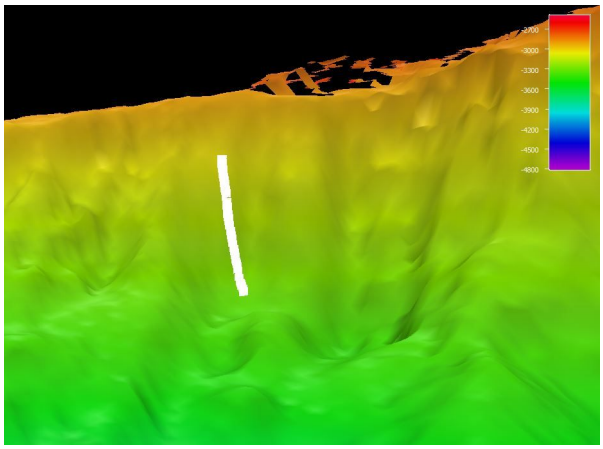
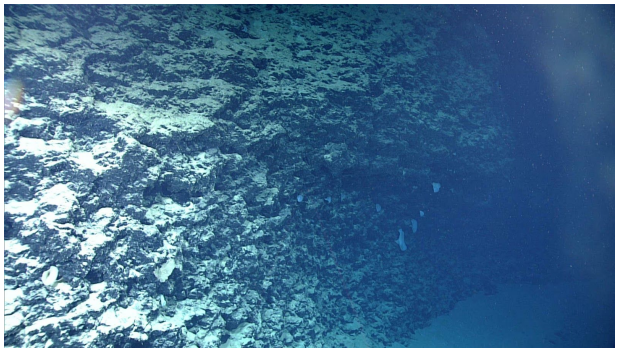
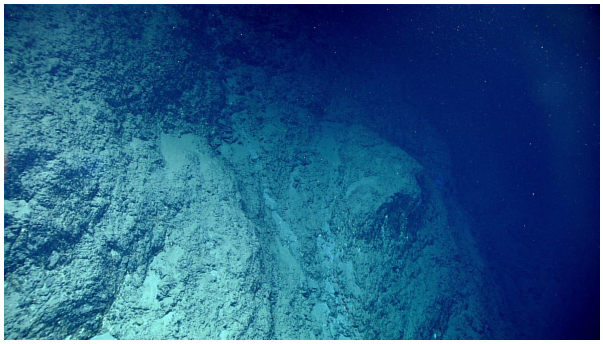
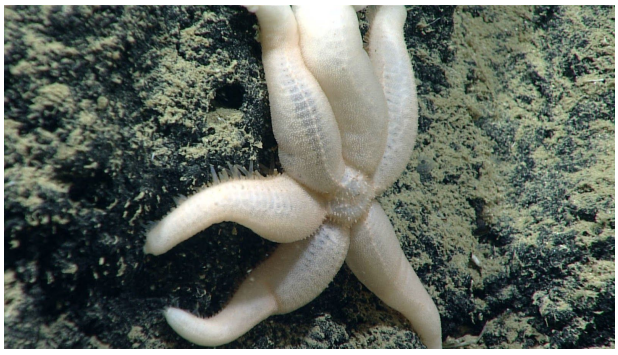
Dive Description	The habitat at the beginning of the dive was characterized by soft sediment mixed with step-like formations of rock draped heavily with soft sediments. Soft substrate throughout most of the dive was composed of pteropod shells, foraminiferan shells, and sponge debris. Much of the dive took place on hard, consolidated bottom with significant FeMn crusts, threby making rock sampling difficult. Vertical or steep slopes (>45 degrees) dominated much of the dive. Little evidence was found of failures in the rock indicated by freshly exposed surfaces. This may indicate that this landslide may not have been as active as previously thought. Even though the end waypoint was not quite reached, we made important observations of geological foundations in this area over a significant vertical depth range (3,024-3,342 m). There were only six fish species of demersal fish at this location, and most occurred at the beginning of the dive. These species included grenadier (*Nezumia* sp.), *Bathysaurus* sp., Halosaurs (*Aldrovandia* sp.), *Ipnops murrayi*, synaphobranchid eels, and one ophidiform. We saw two *Bathysaurus* sp., which appeared quite large, greater than 1 m in length. They also had the same white amphipods on the pectoral and caudal fins, which were interpreted as being parasitic on an earlier dive. There was a large fish at the very end of the dive, but the ROV was already ascending and we didn't get a good close-up view. Sponges were the most dominant organism at this site. Glass sponges made up most of the sponge fauna during the dive. There was a bell-shaped glass sponge very common at the beginning of the dive. We made one collection of a glass sponge (17:55 UTC) that was common towards the end of the dive around 3,100 m. This sponge was identified as *Poliopogon* cf. *amadou*, which has been observed in the mid and eastern North Atlantic at similar depths. It has not been identified for the U.S. Caribbean and our collection of this may represent a new species or substantial range extension. There were some different stalked sponges and possibly a euplectillid, but we could not get close enough. We also saw a cladorizid sponge, but it was very small. Echinoderms were the second most dominant group observed during this dive. Sea cucumbers were seen throughout the dive. We saw about five species of holothurians, a small stalked crinoid, and an unstalked crinoid. We also observed four species of sea stars. We collected one sea star, Pedicellasteridae, which might be a new species. This sea star had six arms. We tried to collect a small Goniasteridae sea star, but it was too small to be scooped. A brisingid, and slime star was also identified during the dive. We saw quite a few shrimp, including the swimming shrimps (Aristeidae). Other organisms identified during this dive were small branching bryozoans, a carnivorous tunicate (*Megalodicopia*-like), ctenophores, cerianthid anemone, a possible corallimorph, an interesting possible plated polychaete worm, and a skeleton of a whale barnacle. We also observed scattered trash, including fishing line and beverage cans.
Notable Observations	We observed scattered trash including fishing line and beverage cans throughout the dive.
Community Presence/ Absence (*community is defined as more than two species*)	✓ Corals and Sponges ❑ Chemosynthetic Community ❑ High biodiversity Community ❑ Active Seep or Vent ❑ Extinct Seep or Vent ❑ Hydrates

Overall Map of the ROV Dive Area	Close-up Map of Main Dive Site
	
Representative Photos of the Dive	
	
High vertical relief dominated the seafloor for much of the early and middle portion of the dive. Only small glass sponges were observed on these features.	Smoother rock surfaces on the well exhibited substantial sediment build up. No attached fauna was observed on this substrate type.
	
An unknown Pedicellasterid sea star was found in the final moments of the dive at a depth of 3,035 m. This star is likely an undescribed species, as this group is very poorly known from this depth range.	During the final 100 m of the dive, we encountered a relatively high-density of hexactinellid sponges (*Poliopogon* cf. *amadou*) compared to the earlier portion of the dive. These sponges are not well studied from the Western Atlantic and may constitute a substantial range extension or new species.

Samples Collected

Sample ID	EX1811_D11_01G
Date (UTC)	20181111
Time (UTC)	174907
Depth (m)	3033.858
Temp. (˚C)	2.717
Field ID(s)	Rock

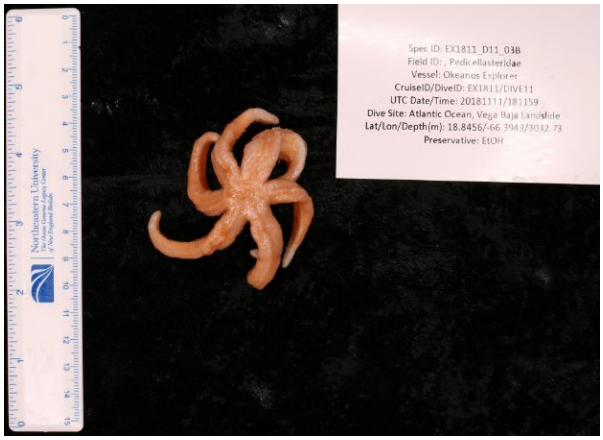
Commensals

Commensal Sample ID	Field Identification	Count
EX1811_D11_01G_A01	Bryozoan	1
EX1811_D11_01G_A02	Glass Sponge	1
EX1811_D11_01G_A03	Glass Sponge	1

Comments

Sample ID	EX1811_D11_02B
Date (UTC)	20181111
Time (UTC)	175654
Depth (m)	3033.963
Temp. (˚C)	2.72
Field ID(s)	Porifera

Commensals	No commensals
Comments	

Sample ID	EX1811_D11_03B	
Date (UTC)	20181111	
Time (UTC)	181159	
Depth (m)	3032.727	
Temp. (°C)	2.735	
Field ID(s)	Pedicellasteridae	
Commensals	No commensals	
Comments		

Please direct inquiries to:

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